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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimentl sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample and a personnel evaluation form are also included. (AG)

June 1968 United States Employment Service Technical Report S-417

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TM 002 029

Development of USES Aptitude Test Battery for Telephone Ad-Taker

(print. & pub.) 249.368

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U.S. DEPARTMENT OF LABOR
MANPOWER ADMINISTRATION

ED 068548

Technical Report on Development of USES Aptitude Test Battery

For . . . . . .

Telephone Ad Taker (print.& pub.) 249.368

S-417

(Developed in Cooperation with the
Florida State Employment Service)

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June 1968

FOREWORD

The United States Employment Service General Aptitude Test Battery (GATB) was first published in 1947. Since that time the GATB has been included in a continuing program of research to validate the tests against success in many different occupations. Because of its extensive research base the GATB has come to be recognized as the best validated multiple aptitude test battery in existence for use in vocational guidance.

The GATB consists of 12 tests which measure 9 aptitudes: General Learning Ability, Verbal Aptitude, Numerical Aptitude, Spatial Aptitude, Form Perception, Clerical Perception, Motor Coordination, Finger Dexterity, and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, with a standard deviation of 20.

Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, in combination, predict job performance. For any given occupation, cutting scores are set only for those aptitudes which contribute to the prediction of performance of the job duties of the experimental sample. It is important to recognize that another job might have the same job title but the job content might not be similar. The GATB norms described in this report are appropriate for use only for jobs with content similar to that shown in the job description included in this report.

Charles E. Odell, Director
U.S. Employment Service

GATB Study #2707

DEVELOPMENT OF USES APTITUDE TEST BATTERY

FOR

Telephone Ad Taker (print.& pub.) 249.368-022
S-417

This report describes research undertaken for the purpose of developing General Aptitude Test Battery (GATB) norms for the occupation of Telephone Ad Taker (print.& pub.) 249.368-022. The following norms were established:

GATB Aptitudes	Minimum Acceptable GATB Scores
G-General Learning Ability	90
Q-Clerical Perception	90
K-Motor Coordination	100

RESEARCH SUMMARY

Sample:

60 female Telephone Ad Takers employed in Florida.

Criterion:

Supervisor's ratings.

Design:

Concurrent (tests and criterion data were collected at approximately the same time). Minimum aptitude requirements were determined on the basis of a job analysis and statistical analyses of aptitude mean scores, standard deviations, aptitude-criterion corrections, and selective efficiencies.

Concurrent Validity:

Phi Coefficient = .27 ($P/2 < .025$)

Effectiveness of Norms:

Only 67% of the nontest-selected workers used for the study were good workers: If the workers had been test-selected with the S-417 norms, 76% would have been good workers. 33% of the nontest-selected workers used for this study were poor workers; if the workers had been test-selected with the S-417 norms, only 24% would have been poor workers. The effectiveness of the norms is shown graphically in Table 1:

TABLE 1

Effectiveness of Norms

	Without Tests	With Tests
Good Workers	67%	76%
Poor Workers	33%	24%

SAMPLE DESCRIPTION

Size:

N = 60

Occupational Status:

Employed workers

Work Setting:

Workers were employed at the Miami Daily Herald, Miami, Florida.

Employer Selection Requirements:

Education: High School graduation

Previous Experience: Helpful, but not necessary

Tests: None

Other: Interview

Principal Activities:

The job duties for each worker are comparable to those shown in the job description in the Appendix.

Minimum Experience:

All workers in the sample had at least one month total job experience.

TABLE 2

Means, Standard Deviations (SD), Ranges, and Person Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

	Mean	SD	Range	r
Age (years)	37.5	12.4	17 - 59	.210
Education (years)	12.1	1.2	10 - 16	.091
Experience (months) (Company)	34.6	40.2	1 - 184	.310**

**Significant at the .05 level

EXPERIMENTAL TEST BATTERY

All 12 tests of the GATB, B-1002B were administered in December 1963.

CRITERION

The criterion consisted of supervisory ratings of job proficiency made at approximately the same time as the test data was collected. Ratings and re-ratings were made by the immediate supervisor of each worker with a two-week interval between ratings.

Rating Scale:

USES Form SP-21, "Descriptive Rating Scale" was used. This scale (see Appendix) consisted of all nine items covering different aspects of job proficiency.

Reliability:

The correlation between the ratings and re-ratings was .74, indicating a significant relationship. Therefore, the final criterion consisted of the combined score of the two sets of ratings.

Criterion Score Distribution:

Possible Range:	18 - 90
Actual Range:	41 - 89
Mean:	63.2
Standard Deviation:	12.5

Criterion Dichotomy:

The criterion distribution was dichotomized into low and high groups by placing 33% of the sample in low criterion group to correspond with the percentage of workers considered by the employer to be unsatisfactory or marginal. Workers in the high criterion group were designated as "good workers" and those in the low group as "poor workers." The criterion critical score is 57.

APTITUDES CONSIDERED FOR INCLUSION IN THE NORMS

Aptitudes were selected for tryout in the norms on the basis of a qualitative analysis of job duties involved and a statistical analysis of test and criterion data. Aptitudes G, V, and Q were considered because the qualitative analysis indicated that these aptitudes are important for the job duties. Aptitudes V, Q, and K were considered because they had relatively high means. Aptitudes G, V, and K were considered because of their low standard deviation.

TABLE 3

Qualitative Analysis
(Based on job analysis, the aptitudes listed appear to be important to the work performed)

Aptitude	Rationale
G - General Learning Ability	Necessary to understand various forms and charts, and learn additional information as it is added.
V - Verbal Aptitude	Necessary for communication with customers and suggested wording for advertisements.
Q - Clerical Perception	Necessary to write up copy and complete and select forms.

TABLE 4

Means, Standard Deviations (SD), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for the Aptitudes of the GATB

Aptitude	Mean	SD	Range	r
G - General Learning Ability	105.4	12.5	71-133	.018
V - Verbal Aptitude	111.4	14.1	84-156	.019
N - Numerical Aptitude	103.7	14.4	74-136	.005
S - Spatial Aptitude	99.5	15.8	58-143	-.058
P - Form Perception	99.2	17.7	64-137	-.062
Q - Clerical Perception	120.2	19.2	86-181	-.050
K - Motor Coordination	112.9	14.5	82-146	.242
F - Finger Dexterity	97.5	17.8	57-139	-.033
M - Manual Dexterity	98.1	19.5	57-150	.009

TABLE 5

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data									
Important	X	X				X			
Irrelevant				X	X			X	X
Relatively High Mean		X				X	X		
Relatively Low Standard Dev	X	X	X				X		
Significant Correlation with Criterion									
Aptitudes to be Considered for Trial Norms	G	V				Q	K		

DERIVATION AND VALIDITY OF NORMS

Final norms were derived on the basis of a comparison of the degree to which trial norms consisting of various combinations of Aptitudes G, V, Q, and K at trial cutting scores were able to differentiate between 67% of the sample considered good workers and 33% of the sample considered poor workers. Trial cutting scores at five point intervals approximately one standard deviation below the mean are tried because this will eliminate about one-third of the sample with three-aptitude norms. For two-aptitude trial norms, minimum cutting scores of slightly more than one standard deviation below the mean will eliminate about one-third of the sample; for four-aptitude trial norms, cutting scores of slightly less than one standard deviation below the mean will eliminate about one-third of the sample. The Phi Coefficient was used as a basis for comparing trial norms. The optimum differentiation for the occupation of Telephone Ad Taker (print.& pub.) 249.368-022 was provided by norms of G-90, Q-90, and K-100. The validity of these norms is shown in Table 6 and is indicated by a Phi Coefficient of .27 (statistically significant at the .025 level).

TABLE 6

Concurrent Validity of Test Norms, G-90, Q-90 and K-100

	Nonqualifying Test Scores	Qualifying Test Score	Total
Good Worker	8	32	40
Poor Worker	10	10	20
Total	18	42	60

Phi Coefficient (ϕ) =.27

Chi Square ($X^2_{\bar{y}}$) = 4.4

Significance Level = P/2 $<$.025

DETERMINATION OF OCCUPATIONAL APTITUDE PATTERN

The data for this study did not meet the requirements for incorporating the occupation studied into any of the 36 OAP's included in Section II of the Manual for the General Aptitude Test Battery. The data for this sample will be considered for future grouping of occupations in the development of new occupational aptitude patterns.

SP-21
Rev. 2/61

A-P-P-E-N-D-I-X

DESCRIPTIVE RATING SCALE
(For Aptitude Test Development Studies)

Score____

RATING SCALE FOR _____
D. O. T. Title and Code

Directions: Please read Form SP-20, "Suggestions to Raters", and then fill in the items listed below. In making your ratings, only one box should be checked for each question.

Name of Worker (print) _____
(Last) (First)

Sex: Male_____ Female_____

Company Job Title: _____

How often do you see this worker in a work situation?

☐ See him at work all the time.

☐ See him at work several times a day.

☐ See him at work several times a week.

☐ Seldom see him in work situation.

How long have you worked with him?

☐ Under one month.

☐ One to two months.

☐ Three to five months.

☐ Six months or more.

A. How much work can he get done? (Worker's ability to make efficient use of his time and to work at high speed.)

____ 1. Capable of very low work output. Can perform only at an unsatisfactory pace.

____ 2. Capable of low work output. Can perform at a slow pace.

____ 3. Capable of fair work output. Can perform at an acceptable but not a fast pace.

____ 4. Capable of high work output. Can perform at a fast pace.

____ 5. Capable of very high work output. Can perform at an unusually fast pace.

B. How good is the quality of his work? (Worker's ability to do high-grade work which meets quality standards.)

____ 1. Performance is inferior and almost never meets minimum quality standards.

____ 2. The grade of his work could stand improvement. Performance is usually acceptable but somewhat inferior in quality.

____ 3. Performance is acceptable but usually not superior in quality.

____ 4. Performance is usually superior in quality.

____ 5. Performance is almost always of the highest quality.

C. How accurate is he in his work? (Worker's ability to avoid making mistakes.)

____ 1. Makes very many mistakes. Work needs constant checking.

____ 2. Makes frequent mistakes. Work needs more checking than is desirable.

____ 3. Makes mistakes occasionally. Work needs only normal checking.

____ 4. Makes few mistakes. Work seldom needs checking.

____ 5. Rarely makes a mistake. Work almost never needs checking.

D. How much does he know about his job? (Worker's understanding of the principles, equipment, materials and methods that have to do directly or indirectly with his work.)

☐ 1. Has very limited knowledge. Does not know enough to do his job adequately.

☐ 2. Has little knowledge. Knows enough to "get by."

☐ 3. Has moderate amount of knowledge. Knows enough to do fair work.

☐ 4. Has broad knowledge. Knows enough to do good work.

☐ 5. Has complete knowledge. Knows his job thoroughly.

E. How much aptitude or facility does he have for this kind of work? (Worker's adeptness or knack for performing his job easily and well.)

☐ 1. Has great difficulty doing his job. Not at all suited to this kind of work.

☐ 2. Usually has some difficulty doing his job. Not too well suited to this kind of work.

☐ 3. Does his job without too much difficulty. Fairly well suited to this kind of work.

☐ 4. Usually does his job without difficulty. Well suited to this kind of work.

☐ 5. Does his job with great ease. Exceptionally well suited for this kind of work.

F. How large a variety of job duties can he perform efficiently? (Worker's ability to handle several different operations in his work.)

☐ 1. Cannot perform different operations adequately.

☐ 2. Can perform a limited number of different operations efficiently.

☐ 3. Can perform several different operations with reasonable efficiency.

☐ 4. Can perform many different operations efficiently.

☐ 5. Can perform an unusually large variety of different operations efficiently.

G. How resourceful is he when something different comes up or something out of the ordinary occurs? (Worker's ability to apply what he already knows to a new situation.)

____ 1. Almost never is able to figure out what to do. Needs help on even minor problems.

____ 2. Often has difficulty handling new situations. Needs help on all but simple problems.

____ 3. Sometimes knows what to do, sometimes doesn't. Can deal with problems that are not too complex.

____ 4. Usually able to handle new situations. Needs help on only complex problems.

____ 5. Practically always figures out what to do himself. Rarely needs help, even on complex problems.

H. How many practical suggestions does he make for doing things in better ways? (Worker's ability to improve work methods.)

____ 1. Sticks strictly with the routine. Contributes nothing in the way of practical suggestions.

____ 2. Slow to see new ways to improve methods. Contributes few practical suggestions.

____ 3. Neither quick nor slow to see new ways to improve methods. Contributes some practical suggestions.

____ 4. Quick to see new ways to improve methods. Contributes more than his share of practical suggestions.

____ 5. Extremely alert to see new ways to improve methods. Contributes an unusually large number of practical suggestions.

I. Considering all the factors already rated, and only these factors, how acceptable is his work? (Worker's "all-around" ability to do his job.)

____ 1. Would be better off without him. Performance usually not acceptable.

____ 2. Of limited value to the organization. Performance somewhat inferior.

____ 3. A fairly proficient worker. Performance generally acceptable.

____ 4. A valuable worker. Performance usually superior.

____ 5. An unusually competent worker. Performance almost always top notch.

FACT SHEET

Job Title: Telephone Ad Taker (print.& pub.) 249.368-022

Job Summary: Responsible for the sale and handling of classified advertising orders, cancellations, corrections, and inquiries on classified advertising. Writes copy, determines rate charge from rate schedule, and assigns box numbers to anonymous advertisements. Keeps accounts and records of transactions and transmits collections to accounting office. Writes and forwards orders.

Work Performed: Handles incoming sales from individuals and commercial accounts. Suggests effective copy. Sells multiple day advertising to insure results. Writes up correctly spelled and punctuated copy on order form; marks type sizes and order dates.

Handles outgoing calls to commercial accounts: Makes outgoing calls to accounts to suggest value of regular advertising, to make suggestions on what to advertise, and to suggest copy. Sells benefits of newspaper as opposed to other media.

Handles corrections on ads: Makes changes because of error or changes of mind. Finds copy in paper and processes change on proper form. Soothes customer if irritated. Writes up complaint if possible adjustment is in order.

Handles cancellations: Takes call and finds out if cancellation is because of completed sale or advertiser is discouraged. If latter, sells improved copy and keeps in paper. If ad cancelled writes up cancellation order.

Re-solicits expiring orders: Calls expiring orders. Finds out if item sold. If not sold, finds out what action ad created. Based on above, suggests reinserting ad with changed copy, lower price of item. Writes renewal order.

Sell new advertising contracts: Makes cold calls to non-advertising commercial firms. Sells advantages of classified advertising and newspapers. Convinces advertiser of added profit potential from this investment.

Effectiveness of Norms: Only 67% of the nontest-selected workers used for this study were good workers, if the workers had been test-selected with S-417 norms, 76% would have been good workers. 33% of the nontest-selected workers used for this study were poor workers; if the workers had been test-selected with S-417 norms, only 24% would have been poor workers.

Applicability of S-417 Norms: The aptitude test battery is applicable to jobs which include a majority of job duties described above.

GPO 864-550

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